

REMARKS

In the July 5, 2002 Office Action, the specification was objected to and claims 1-19 stand rejected in view of prior art. Claims 1-19 also were rejected for failing to indicate and claim particularly and distinctly the subject matter that Applicants regard as the invention. No other objections or rejections were made in the Office Action.

Status of Claims and Amendments

In response, Applicants have amended the specification and independent claim 1 to distinguish it from the prior art and to overcome the rejections due to indefiniteness. Claims 2, 7, 11, 13-16, 18, and 19 have been amended to clarify the language. Applicants have also canceled claims 4 and 6, and added new claims 20-30. Thus, claims 1-3, 5, 7-30 are pending, with claims 1 and 20 being the only independent claims. Reexamination and reconsideration of the pending claims are respectfully requested in view of the above amendments and the following comments.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages that begin with the caption "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**" show the changes made to the specification and claims by the current amendment.

Specification

In paragraph 1 of the Office Action, the specification was objected to for various informalities. In response, Applicants have amended the specification to correct the informalities. Applicants have also amended the specification to correct the typographical errors that Applicants found, and also to provide support for the amended claims.

Applicant believes that the specification is now correct and complies with 37 CFR §1.71 and 37 CFR §1.75(d)(1). Withdrawal of the objections is respectfully requested.

Claim Rejections - 35 U.S.C. §112

In paragraphs 2-3 of the Office Action, claims 1-19 were rejected under 35 U.S.C. §112, second paragraph. In response, Applicants have amended claims 1 and 13 to clarify claims 1-19. Specifically, Applicants have amended the languages “the first control unit,” “the bag ejection interval,” and “the posture of the bag” in claim 1 and “the transfer unit” in claims 13. Applicants believe that the claims 1-19 comply with 35 U.S.C. §112, second paragraph. Withdrawal of the rejections is respectfully requested.

Rejections - 35 U.S.C. § 103

In paragraphs 4-6 the Office Action, claims 1-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable. More specifically, claims 1-10 and 12-19 were rejected over U.S. Patent No. 5,794,406 to Reichental et al. in view of U.S. Patent No. 4,517,790 to Kreager. Claim 11 was rejected over the Reichntel patent in view of the Kreager patent and U.S. Patent No. 4,719,741 to Mabry. In response, Applicants have amended independent claim 1 to overcome the rejections.

More specifically, independent claim 1 now clearly recites that the traveling speed of the first transfer unit is equivalent to or a little higher than the speed at which the bags are transferred to the first transfer unit. Clearly this arrangement is *not* disclosed or suggested by the Reichental patent, the Kreager patent, or any other prior art of record.

The purpose of the present invention is to avoid variation in the bag ejection timing to the downstream device. Accordingly, it is important that the speed of the first transfer unit is controlled relative to the speed at which the bags are transferred to the control unit, such that the traveling speed of the first transfer unit is equivalent to or a little higher than the speed at which the bags are transferred to the first transfer unit.

Regarding the Reichental patent, the Office Action asserts that column 7, line 66-column 8, line 7 discloses the control on the belts. However, the Reichental patent does not disclose *how* the speed of the belts is controlled. Furthermore, as seen in Figures 1 and 15, the foam cushioning panels that were formed are randomly stored in the collection table 83. Therefore, there is no incentive in the Reichental patent to align the form cushioning panels on the transfer unit or to prevent variations in the ejection intervals. Accordingly, Applicants believe that the arrangement of now-amended claim 1 is not disclosed or suggested by the Reichental patent.

The Kreager patent has been cited in the Office Action to show the inclination of the first transfer unit. The Kreager patent discloses two belt conveyors 56 and 60, and a guide chute 58 in Figure 1. As seen in Figure 1, the bag P is transferred to the belt 56 *before* the bag P is separated from the subsequent bag. However, claim 1 requires that the bags be separated before they are ejected to the first transfer unit. Therefore, the belt 56 does not satisfy the requirement of "first transfer unit" in claim 1. Furthermore, the guide chute 58, which receives the bags after they are separated, is a static member; there is no drive unit that drives the guide chute 58. Accordingly, the guide chute 58 does not disclose or suggest the arrangement of now-amended claim 1.

The Mabry patent has been cited in the Office Action to show the cooling unit for spraying cooling gas on the sealed part. The Mabry does not disclose or suggest any transfer unit. Accordingly, the Mabry cannot compensate for the deficiencies of the Reichental patent and the Kreager patent.

Accordingly, the Reichental patent, the Kreager patent, and the Mabry patent do not disclose or suggest the arrangement of the now-amended claim 1, whether taken singularly or in any combination.

With regard to dependent claims 2-19, they depend from claim 1, and therefore are narrower. Since claim 1 is not disclosed or suggested, Applicants believe that dependent claims 2-19 are not disclosed or suggested by the prior art of record.

In view of the above comments and amendments, Applicants believe that claims 1-19 are allowable over prior art of record.

New Claims 20-30

Applicants have added new claims 20-30. Claim 20 is an independent claim, with claims 21-30 depending from claim 20. For the reasons set forth below, Applicants believe that claims 20-30 are allowable over the prior art of record.

Claim 20 sets forth a vertical bag form-fill-seal packaging machine having a bag forming/packaging unit and an ejecting unit. The bag forming/packaging unit includes forming means for forming the packaging material received from the supply unit into a tubular shape, pull-down means transferring the tubular-shaped packaging material downward, vertical sealing means for vertically sealing an overlapped part of the tubular-shaped packaging material, transverse sealing means for transversely sealing the tubular-shaped packaging material to form the bags, and separating means for separating and ejecting each of the bags. The ejecting unit includes first transfer means for receiving the separated bags from the bag-forming/packaging unit and transferring the separated bags to the downstream device, first drive means for driving the first transfer means, and control means for controlling a posture of the bags ejected from the first transfer means by controlling the first drive means. Applicants believe that the arrangement of claim 20 is not disclosed or suggested by the Reichental patent, the Kreager patent, or the Mabry patent.

In the Reichental patent, a sheet material is brought to the vertical sealing means (31, 32, and 43). *See* Figure 8, column 5, lines 17-28. As seen in Figure 8, the sheet material is

not formed in the *tubular* shape as required by claim 20. Furthermore, as advanced in the discussion of claim 1, the Reichental patent does not disclose or suggest how the first transfer means is controlled. Accordingly, the Reichental patent does not disclose or suggest the control of the posture of the bags. Therefore, Applicants believe that the Reichental patent does not disclose or suggest the arrangement of claim 20.

Regarding the Kreager patent, claim 20 also requires that the first transfer means receive separated bags from the bag-forming/packaging unit. As advanced in the discussion of claim 1, neither the belt 56 nor the guide chute 58 of the Kreager patent qualifies as the first transfer means. Also, the Kreager patent does not disclose the control of the first transfer means. Accordingly, the Kreager patent does not disclose or suggest the arrangement of claim 20, either singularly or in combination with the Reichental patent.

The Marbry patent discloses the cooling unit. As advanced in the discussion of claim 1, the Marbry patent does not disclose or suggest the arrangement of claim 20, either singularly or in combination with the Reichental patent and/or the Kreager patent.

With regard to dependent claims 21-29, they depend from claim 20, and therefore are narrower. Since claim 20 is not disclosed or suggested, Applicants believe that depended claims 21-29 are not disclosed or suggested by the prior art of record.

In view of the above comments and amendments, Applicants believe that claims 20-30 are allowable over prior art of record.

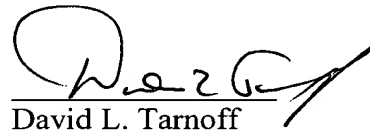
Prior Art Citation

In the Office Action, additional prior art references were made of record. Applicants believe that these references do not render the claimed invention obvious.

* * *

In view of the foregoing amendment and comments, Applicants respectfully assert that claims 1-3, 5, and 7-30 are now in condition for allowance. Reexamination and reconsideration of the pending claims are respectfully requested.

Respectfully submitted,



David L. Tarnoff
Reg. No. 32,383

SHINJYU GLOBAL IP COUNSELORS, LLP
1233 Twentieth Street, NW, Suite 700
Washington, DC 20036
(202)-293-0444
Dated: 12-3-02

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The paragraph beginning at 12, line 14 has been amended as follows:

-- The product discharged from the measuring unit 110 moves into a vertical bag form-fill-seal packaging machine 120 located under the measuring unit 110. The vertical bag form-fill-seal packaging machine 120 is a device for forming bags, and filling and packing a product in the bags simultaneously. The bags containing the product as a result of the packaging slide ~~slides~~ down the stationary chute 129 provided with the vertical bag form-fill-seal packaging machine 120, and are loaded onto the transfer conveyor 130. The transfer conveyor 130 transfers the bags continuously discharged there to a weight checker 140 in the downstream process. --.

The paragraph beginning at 14, line 10 has been amended as follows:

-- Fig. 4 shows a vertical bag form-fill-seal packaging machine 1, including a forced ejector 6 in accordance with a first embodiment of the present invention. The vertical bag form-fill-seal packaging machine 1 is a machine for receiving the film from a supply unit 4, packing a product such as food for example, potato chips into bags, and mainly including a bag-forming/packaging section 5, ~~a film supply unit 4~~, and a forced ejector 6. The bag forming/packaging section 5 is a main region for packing the product into bags. The film supply unit 4 supplies the bag-forming/packaging section 5 with the film that ultimately becomes bags. The forced ejector 6 forcibly ejects downward the bags formed by the bag-forming/packaging section 5. An operation switch 7 (see Fig. 5) is provided at the front of the vertical bag form-fill-seal packaging machine 1. A liquid-crystal display 8 for showing the status of the operation is provided where the operator manipulating the operation switch can visually check operations. The control unit 20 shown in Fig. 5 controls the operation of each of the drive units for the vertical bag form-fill-seal packaging machine 1 and displays various data on the liquid-crystal display 8 based on the input from the operation switch 7. --.

The paragraph beginning at 15, line 20 has been amended as follows:

-- As shown in Fig. 4, the forming mechanism 13 has a tube 31 and a former 32. The tube 31 is a cylindrical member with its top and bottom ends open. The tube 31 is made integral with the former 32 through a bracket. Measured items such as potato chips are put into the open top end of the tube 31 from the measuring unit 110 ~~11~~. The former 32 is provided in such a manner that it surrounds the tube 31. The shape of the former 32 is such that allows the sheet-like film Fm fed from the film supply unit 4 to be formed into a tubular shape when it passes between the former 32 and the tube 31. The pull-down belt mechanism 14 is a mechanism for sucking the film Fm wound on the tube 31 to pick it up and transfer it downward. The pull-down belt mechanism 14 mainly includes a driver roller 41 and a driven roller 42, as well as a suction belt 43. The vertical sealing mechanism 15 vertically seals the overlapped part of the film Fm wound on the tube 31 by heating it while pressing it against the tube 31 at a predetermined pressure. The vertical sealing mechanism 15 has a heater and a heater belt that contacts the overlapped part of the film Fm when heated by the heater. --.

The paragraph beginning at 16, line 16 has been amended as follows:

-- The transverse sealing mechanism 17 is provided beneath the forming mechanism 13, the pull-down belt mechanism 14, and the vertical sealing mechanism 15. As shown in Fig. 6, the transverse sealing mechanism 17 has a pair of symmetrical sealing jaws. Each of the ~~The~~ two sealing jaws 17a, ~~each of which~~ turns in the shape of the letter "D", leaving tracks T that are symmetrical to each other. The sealing jaws 17a mate with each other when the tubular film Fmc is ready to be transversely sealed. The transverse sealing mechanism 17 has a cutter not shown in the drawing. The cutter separates the bag from the tubular film Fmc that follows the bag at the center of the part sealed by the sealing jaws 17a. The transverse sealing mechanism 17 crimps the part to be transversely sealed by sandwiching the tubular film Fmc between the sealing jaws 17a, a process that requires heat in addition to pressure. Therefore, in order to heat the mating surfaces of the sealing jaws 17a that contact the tubular film Fmc, a heater is provided in ~~the~~ each of the sealing jaws 17a, and a thermocouple is attached thereto as well. --.

The paragraph beginning at 33, line 18 has been amended as follows:

-- A possible example of the means for changing the belt-to-belt distance is a mechanism that moves a first unit having the belt 261a, the driver roller 262a, and the driven roller 263a, and a second unit ~~having~~ having the belt 261b, the driver roller 262b, and the driven roller 263b to the right or left by using motorized ball screws and a servo motor. As shown in Fig. 10, this makes it possible to shift each element of the forced ejector 206 from the position shown with the solid line to the position shown with the broken line, and to change the distance between the belts 261a & 261b into any value with the control unit. Then, by adjusting the distance between the belts 261a & 261b while setting the volume of the gas to be filled which is sprayed from above the tubular film Fmc somewhat higher, the volume of the gas to be filled in the bag B, or the volume of the bag B, is made uniform. --.

IN THE CLAIMS:

Claims 1-2 have been amended as follows:

1. (Amended) A vertical bag form-fill-seal packaging machine for forming bags by sealing a continuous tubular packaging material in which a product to be packaged is filled, ~~and~~ for separating and ejecting each of the bags, and for ejecting the bags to a downstream device, the machine comprising:

a first transfer unit for transferring the separated bags to the downstream device
~~another transfer unit or transfer machine provided in a downstream process,~~

a first drive unit for driving the first transfer unit, and

a control unit for controlling the first ~~drive control~~ drive control unit, such that a traveling speed of the first transfer unit is equivalent to or a little higher than a speed at which the bags are transferred to the first transfer unit. ~~said control unit controlling the bag ejection interval or the posture of the bags to be ejected after being transferred by the first transfer unit.~~

2. (Amended) The machine as defined in claim 1, wherein
the control unit controls a posture of the bags ejected from the first transfer unit.
~~provides control so that the bag ejection interval is larger than the bag separation interval.~~

Claims 4 and 6 have been canceled.

Claims 7, 11, 13-16, 18, and 19 have been amended as follows:

7. (Amended) The machine as defined in claim 1 3-, wherein the first transfer unit comprises two belts for holding each of the bags in a sandwiched manner.

11. (Amended) The machine as defined in claim 24 7, wherein the sealing is heat-sealing, ~~and~~
the vertical bag form-fill-seal packaging machine further comprising ~~comprises~~ a cooling unit for spraying a cooling gas on the sealed part of each of the bags while the bags are transferred through the transfer path defined between ~~held in a sandwiched manner by~~ the two belts.

13. (Amended) The machine as defined in claim 12, wherein the second transfer unit is a belt with a guide bar approximately orthogonal to a the direction of transfer.

14. (Amended) The machine as defined in claim 1, further comprising a memory storage unit for storing control settings for each set of products to be packaged, wherein the control unit performs control according to the control settings stored in the memory storage unit.

15. (Amended) The machine as defined in claim 14, wherein at least one of the control settings ~~setting items~~ to be stored in the memory storage unit is a ~~the~~ speed of the first drive unit.

16. (Amended) The machine as defined in claim 15, wherein the control settings include the interval at which the bags are ejected from the first transfer unit, and
the control unit is operatively connected to the downstream device, and provides data at least on the bag ejection time interval to the downstream device. ~~external equipment in the downstream process.~~

18. (Amended) The machine as defined in claim 17, wherein
at least one of the control settings ~~setting items~~ to be stored in the memory storage
unit is ~~a~~ the speed of the first drive unit.

19. (Amended) The machine as defined in claim 18, wherein
the control settings include the interval at which the bags are ejected from the first
transfer unit, and
the control unit is operatively connected to the downstream device, and provides data
at least on the bag ejection time interval to the downstream device. ~~external equipment in the
downstream process.~~

New claims 20-30 have been added as follows.

20. (New) A vertical bag form-fill-seal packaging machine for forming bags from
a continuous packaging material received from a supply unit, filling a product to be packaged
in the bags, and for ejecting the bags to a downstream device, the machine comprising:

a bag-forming/packaging unit, including

forming means for forming the packaging material received from the
supply unit into a tubular shape,

pull-down means for transferring the tubular-shaped packaging
material downward,

vertical sealing means for vertically sealing an overlapped part of the
tubular-shaped packaging material,

transverse sealing means for transversely sealing the tubular-shaped
packaging material to form the bags, and

separating means for separating and ejecting each of the bags; and
an ejecting unit including

first transfer means for receiving the separated bags from the bag-

forming/packaging unit and transferring the separated bags to the
downstream device,

first drive means for driving the first transfer means, and

control means for controlling a posture of the bags ejected from the first transfer means by controlling the first drive means.

21. (New) The vertical bag form-fill-seal packaging machine as defined in claim 20, wherein

said control means controls an interval at which the bags are ejected from the first transfer means.

22. (New) The vertical bag form-fill-seal packaging machine as defined in claim 20, wherein

said first transfer means includes a first belt.

23. (New) The vertical bag form-fill-seal packaging machine as defined in claim 22, wherein

the belt is inclined so that the bags move diagonally downward.

24. (New) The vertical bag form-fill-seal packaging machine as defined in claim 22, wherein

said first transfer means further includes a second belt, the first and second belts defining a transfer passage through which the bags can be transferred.

25. (New) The vertical bag form-fill-seal packaging machine as defined in claim 24, wherein

the transfer passage is bent such that a part of the transfer passage is inclined.

26. (New) The vertical bag form-fill-seal packaging machine as defined in claim 24, wherein

the ejecting unit further includes means for changing the distance between the two belts, a such that a distance between the two belts is at least partially changed.

27. (New) The vertical bag form-fill-seal packaging machine as defined in claim

20, wherein

the ejecting unit further includes:

second transfer means for receiving the bags from the first transfer unit and
transferring and ejecting the bags to the downstream device, and

second drive means for driving the second transfer means, and
the control means further controls the second drive means.

28. (New) The vertical bag form-fill-seal packaging machine as defined in claim

20, wherein

the ejecting unit further includes memory storage means for storing control settings
for each set of products to be packaged, and

the control means controls the first transfer means based on the control settings.

29. (New) The vertical bag form-fill-seal packaging machine as defined in claim

28, wherein

the control settings include a speed of the first transfer means.

30. (New) The vertical bag form-fill-seal packaging machine as defined in claim

28, wherein

the control settings include an interval at which the bags are ejected from the first
transfer means, and

the control means provides to the downstream device the interval at which the bags
are ejected from the first transfer means.